technology currently available and the lowest cost network configuration, *given the existing location of the incumbent LEC's wire centers.*"[16] The Commission has found that prices for interconnection and unbundled network elements should be the one that produces the "lowest cost" of a "reconstructed local network" deploying "the most efficient technology for reasonably foreseeable capacity requirements" affirms that in all respects other than central office location the Commission requires a study that is forward looking.[17] In other words, the network design and technology assumptions in a forward-looking economic cost study should reflect the least-cost, most-efficient options currently available, not the attributes of Verizon's embedded plant. Hence, a proper forward-looking economic cost analysis will explicitly preclude the consideration of embedded costs (*i.e.*, costs "incurred in the past and that are recorded in the incumbent LEC's books of accounts").[18]

This TELRIC approach to network design is what is known as a "scorched node" methodology. The methodology assumes that customers remain in place at their existing locations and are connected to the existing central office locations. However, all existing, in-place local exchange carrier facilities are assumed

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16 47 C.F.R. § 51.505(b)(1), emphasis added.

17 *First Report and Order* at ¶ 685.

18 47 C.F.R. § 51.505(d).

away.[19] This "assuming away" of existing facilities is basic to the concept of "long-run" cost analysis, which treats all costs as potentially variable and avoidable.[20]

Q. VERIZON IS ONLY REQUIRED TO PROVISION ITS ACTUAL, EXISTING NETWORK. HOW DO YOU RECONCILE THIS REQUIREMENT WITH YOUR INTERPRETATION OF THE TELRIC METHODOLOGY?

A. The TELRIC methodology relates only to the costing and pricing of unbundled network elements, not to the physical provisioning of those elements. There is no inherent contradiction in setting prices for access to the existing physical network based on forward-looking economic costs. To the contrary, TELRIC-based pricing of unbundled network elements mimics the outcome that would occur if incumbents such as Verizon faced effective competition in the provision of unbundled network elements.

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19 The TELRIC methodology differs from a "scorched earth" or greenfield approach to forward-looking costing in that the forward-looking network design is constrained to place central offices or "nodes" at the existing locations.

20 As the Commission is quite aware, there is nothing novel with this approach. For example, the TELRIC studies for unbundled loops that Verizon previously submitted throughout its operations reflected its view of a forward-looking network design with fiber feeder in many places where copper facilities exist today. Verizon's unbundled loop cost analysis did not include the cost of removing the existing copper feeder facilities; instead, it assumed away the existing facilities and studied only the cost of placing new, forward-looking facilities.

The market-clearing prices for goods and services sold in a competitive, unregulated market reflect forward-looking economic costs, even though the firms producing those goods and services employ processes and equipment of varying vintages. A steel mill using out-of-date production methods must meet or beat the prices of competing firms employing the most modern production technologies and equipment, even if such pricing falls below the older mill's "actual" cost (based on its existing equipment). Like all firms in competitive markets, this steel mill must either lower its long-run costs to match more efficient rivals (*i.e.*, achieve "actual" costs that equate to efficient, forward-looking costs) or exit the market. Competitive markets offer no leeway for recovering "actual" costs that exceed efficient, forward-looking costs. Thus, the prices established for unbundled network elements in this arbitration can only mimic the prices that would prevail in a competitive market if the Commission treats the costing and pricing process as distinct from Verizon's provisioning process.

Q. WHAT IS THE SIGNIFICANCE OF THE SECOND ASPECT OF THE TELRIC METHODOLOGY THAT YOU IDENTIFIED PREVIOUSLY (*i.e.*, TOTAL COST MINIMIZATION)?

A. As the Commission describes in defining its TELRIC methodology, UNE studies should reflect, "the forward-looking cost over the long run of *the total quantity of the facilities and functions* that are directly attributable to, or reasonably

identifiable as incremental to, such element, calculated taking as a given the incumbent LEC's provision of other elements."[21] To comply with this total cost minimization requirement, a cost study must compute both recurring and non-recurring costs based on the same network configuration. Failure to compute recurring and non-recurring costs based on a consistent network design can lead to a systematic bias, upward or downward, in the estimation of total forward-looking costs. This bias occurs because alternative network designs reflect different tradeoffs between the kinds of costs usually classified as recurring (capital costs and costs for ongoing operations and maintenance) and those classified as non-recurring (one-time, customer-specific costs caused by a particular service order).

The correct total cost calculation is the one that results from calculating recurring and non-recurring costs based on the same network design. This calculation provides the information necessary to determine, *e.g.*, the crossover point at which it becomes more efficient to use fiber feeder and DLC, rather than an all-copper loop design, and thereby facilitates cost minimization. A proper analysis embodies the network design that produces the lowest total cost, considering both the recurring and non-recurring costs for the total quantity of all network elements that the incumbent will supply using that network.

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[21] 47 C.F.R. § 51.505(b), emphasis added.

Q. HAVE STATE REGULATORS RECOGNIZED THE IMPORTANCE OF USING A CONSISTENT NETWORK DESIGN TO CALCULATE RECURRING AND NONRECURRING COSTS FOR UNBUNDLED NETWORK ELEMENTS?

A. Yes. As examples, commissions in Massachusetts, Texas, and California have all endorsed the fundamental principle of using a consistent network design to calculate recurring and nonrecurring costs for unbundled network elements.

The Massachusetts Department of Telecommunications and Energy has found that:

> Our aim, as stated, is to maintain consistency between the assumptions used in the TELRIC recurring cost study and the NRC study....[22]

Similarly, a Texas Arbitration Award states that:

> [t]he Arbitrators find that the network design inconsistencies in the recurring and non-recurring cost studies do not result in correct xDSL costs and rates and consequently render the proposed charges invalid.[23]

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22 Massachusetts DTE, Consolidated Petitions of New England Telephone and Telegraph Company d/b/a Bell Atlantic Massachusetts, *et al.*, pursuant to Section 252(b) of the Telecommunications Act of 1996, for Arbitration of Interconnection Agreements between Bell Atlantic-Massachusetts and the aforementioned companies, DPU/DTE 96-73/74, 96-75, 96-80/81, 96-83, 96-94-Phase 4-L, October 14, 1999, at 19.

23 Public Utility Commission of Texas, Arbitration Award, Docket Nos. 20226 and 20272, November 30, 1999, at 96.

Consistent with this finding, the Arbitrators ordered Southwestern Bell Telephone to file new recurring and nonrecurring cost studies for xDSL-capable loops and line "conditioning" that are "based on the same network."[24]

This ruling is consistent with an earlier California decision on the nonrecurring costs for unbundled network elements, in which the California Public Utilities Commission found that:

> it makes little sense to model one type of network for unbundled elements and then assume a different network exists for ordering and provisioning the same unbundled elements. We will evaluate Pacific's [nonrecurring cost] model and parties' proposals using the forward looking network we have previously assumed.[25]

The California decision also provided a specific example of the type of double-recovery that could occur if the networks assumed for recurring and nonrecurring costs were not the same.

> In D.96-08-021 and D.98-02-106, we adopted Pacific's loop and access line costs based on a mix of copper and fiber. In the recurring phase of this proceeding, Pacific assumed a 52%/48% copper/fiber ratio. We think it would be both unfair and unreasonable to allow Pacific recurring cost recovery based on this ratio and then allow a different network mix in developing its nonrecurring costs. It would amount to allowing double recovery

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[24] *Id.* at 97.

[25] California Public Utilities Commission Decision 98-12-097, issued December 17, 1998, in Dockets R.97-04-003/I.93-04-002, at 34.

of NGDLC costs by overstating Pacific's nonrecurring cost studies.[26]

The California Commission's concern regarding double-recovery of Next Generation Digital Loop Carrier ("NGDLC") costs exactly parallels the concern I will discuss below regarding Verizon's proposals in this arbitration to recover forward-looking loop recurring costs and embedded or actual nonrecurring costs for xDSL line "conditioning."

The decisions of these three commissions emphasize the importance of using a consistent network design for calculating both recurring and nonrecurring costs as an essential safeguard against double-recovery of costs.

Q. WHY IS THIS AVOIDANCE OF DOUBLE-RECOVERY OF COSTS SO IMPORTANT?

A. First, the incumbents' double-recovery of costs equates to new entrants' overpayment of costs. Excessive prices for unbundled network elements will deter efficient entry, contrary to the goals of the TELRIC methodology.

Second, a "mix-and-match" approach to costing that permits double-recovery gives the incumbents improper signals concerning when to modernize their networks. A simple analogy explains this point. The decision to buy a new car typically involves a tradeoff between the higher monthly loan or lease

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26 *Id.* at 70.

payment associated with the new vehicle versus the higher maintenance cost associated with an older vehicle. At some point, the operating cost of the older car becomes so high that it is more economic to dispose of the old vehicle and buy a new one, even if the previously owned car is fully paid off and there are no monthly payments whatsoever. Now suppose, however, that the owner of the older vehicle is guaranteed recovery of the actual cost of all repairs needed to keep the car running. The individual would never have any incentive to incur the cost of buying a new car, and would continue operating the old vehicle long after it ceased to be economically rational (from a societal perspective) to do so. Similarly, if the incumbents are reimbursed for the recurring cost of building a brand-new, modern network (akin to the monthly payment on a new car) *and* for the nonrecurring cost of maintaining and/or modifying their existing network to provide both voice and advanced services, they will have less incentive to invest in new, least-cost technology.

Prices that recover the total cost of building a new, fully modern network *and* selected additional costs associated with an older network design will always exceed TELRIC-based prices, which include only the total recurring and nonrecurring cost of providing service using the least-cost network configuration. Such prices also will always exceed the price that would prevail if unbundled network elements were provided in a competitive environment.

Q. WOULD A STAND-ALONE NON-RECURRING "CONDITIONING" CHARGE COMPORT WITH THE PRINCIPLES OF FORWARD-LOOKING COST ANALYSIS THAT YOU JUST DESCRIBED?

A. No. Stand-alone non-recurring "conditioning" charges are fundamentally inconsistent with forward-looking economic cost principles because such charges would not reflect an efficient, forward-looking network architecture. It is my understanding that the network engineering guidelines in place for the past two decades call for a loop architecture that does not deploy load coils, excessive bridged taps or repeaters (that inhibit the provision of advanced services such as ISDN and DSL-based services). Thus, the premise that Verizon must remove load coils, excessive bridged taps or repeaters to render a loop suitable for the provision of DSL-based services has no place in a non-recurring pricing proposal, much less one based on forward-looking costs.

As I explained above, the assumption of different network architectures in the recurring and non-recurring cost studies for the same network element violates the forward looking economic cost requirement for total cost minimization and creates a significant risk of double-counting. For example, the monthly recurring charge for basic unbundled loops should reflect the cost of a network that deploys fiber feeder and DLC for long loops. These monthly recurring charges will recover *all* costs for building a network without DSL inhibitors such as load coils and excessive bridged tap. Thus, every penny of cost included a stand-alone "conditioning" NRC would thus duplicate a function (the provision of a "conditioned" loop) already fully incorporated in Verizon's recurring cost.

Suppose two computer manufactures exist: "Manufacturer A," which started in business in 1999 and has produced numerous 800 MHz computers at an economic cost of $1,500 each, and "Manufacturer B," which started in business in 2000 producing 1 GHz computers at an economic cost of $1,200 each. To obtain a 1 GHz processor chip and upgrade an existing 800 MHz machine costs Manufacturer A an additional $400.

Further suppose that a new computer application is introduced in 2001 that requires a 1 GHz computer system to function properly. A growing number of customers want to use this application and will not buy a computer with less than a 1 GHz processor. How can Manufacturer A attract business from these customers? Manufacturer A would no doubt like to propose the following deal: "I will provide a 1 GHz computer for a base price of $1,200 — the same market price that Manufacturer B is charging for its 1 GHz computers. But, what I actually have in stock are 800 MHz machines. So you will also need to pay my $400 cost to upgrade my existing stock to support 1 GHz service. This $1,600 price is reasonable because the additional $400 is an actual cost that I will incur."

Manufacturer A's proposal would die a well-deserved death in a competitive market. Customers would not be willing to pay more than the $1,200 price at which Manufacturer B can supply 1 GHz computers and recover its

forward-looking economic cost.[27] The only compensation that Manufacturer A could reasonably expect to receive is the $1,200 market price to produce a new computer with the 1 GHz capability. This would be the true forward-looking economic cost to Manufacturer A as well, because the economic value of its 800 MHz machines would have fallen to $800, the difference between the market value of a 1 GHz computer and the $400 cost that Manufacturer A incurs to upgrade its 800 MHz to 1 GHz. The decrease in value of Manufacturer A's 800 MHz computers is an example of economic depreciation.

The seemingly absurd proposal by "Manufacturer A" is, however, a close parallel to what Verizon is requesting in this arbitration and has heretofore obtained in some jurisdictions: *i.e.*, it is a proposal to obtain full compensation for the forward-looking costs of a fully modernized loop that meets market requirements for a new advanced service plus additional compensation to bring its stock on hand up to the service standards reflected in that market price. Absent regulatory constraint, Verizon can sustain this type of uneconomic pricing scheme because it still possesses market power.

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27 This simplified example ignores many variables, such as the possibility that "Manufacturer B" would not be able to meet the entire demand for 1 GHz computers or that there is a "Manufacturer C" that started business in 2001 and can supply the entire market demand with computers that cost $1,000.

Q. COULD VERIZON'S IMPOSITION OF NONRECURRING "CONDITIONING" CHARGES SURVIVE IN A COMPETITIVE MARKET?

A. No. As the example above illustrates, a firm operating in a competitive market could not sustain such an approach. For example, imagine that competitors had already built or could readily build networks with the same scope as Verizon's. If Verizon's UNE loops were priced at forward-looking economic cost, that new competitor would incur the equivalent of the forward-looking cost incorporated into the existing UNE loop recurring costs to implement its network. Hence, to earn a normal return, such a competitor would need to charge only the current UNE loop price for loops that support DSL service. If such competitors existed or could plausibly exist — as would be the case in a competitive market — Verizon would be driven out of the market if it insisted on maintaining huge nonrecurring charges to "condition" its loops in addition to the forward-looking recurring cost of modern, DSL-capable loops.

To support the development of competitive forces that may eventually control Verizon's pricing and to deliver the benefits of a competitive market to Virginia as rapidly as possible, the Commission must require Verizon to deliver its bottleneck elements to competitors at market prices, such as are reflected in forward-looking economic cost analysis.

Q. WHY ARE NONRECURRING "CONDITIONING" CHARGES INCONSISTENT WITH FORWARD-LOOKING ECONOMIC COSTING PRINCIPLES?

A. As Mr. Riolo explains in greater detail, the network engineering guidelines in place for more than two decades call for a loop architecture that does not deploy load coils, excessive bridged taps or repeaters that inhibit the provision of advanced services such as ISDN and DSL-based services. Because these features that must be deconditioned to support DSL do not exist in a forward-looking recurring cost analysis, it is inconsistent to include them in a nonrecurring cost analysis. *Doing so violates basic costing requirements.*

Verizon's recurring charge for basic two-wire loops reflects the full forward-looking economic cost of a network design that does not include components such as load coils that interfere with DSL-based services. The assumption of different network architectures in the recurring and nonrecurring cost studies for the same network element violates both common sense and the Commission requirement for total cost minimization. It also creates a significant risk of double-counting costs.

Q. IS IT YOUR CONTENTION THAT THIS COMMISSION HAS RULED OUT THE POSSIBILITY OF ANY NON-RECURRING "CONDITIONING" CHARGES?

A. No. I am aware that this Commission has held open the possibility of allowing incumbents such as Verizon Virginia to recover the costs of "conditioning" through non-recurring charges. The pricing rules that the Commission adopted in

the *UNE Remand Order* make clear, however, that any non-recurring "conditioning" charges must be based on forward-looking economic cost and may not permit a carrier to recover more than total forward-looking economic cost. Specifically, §§ 51.319(a)(3)(B) and (C) of the modified pricing rules state that recovery of line "conditioning" costs must be "in accordance with the Commission's forward-looking pricing principles promulgated pursuant to section 252(d)(1) of the Act" and "in compliance with rules governing nonrecurring costs in § 51.507(e)." Section 51.507(e) reads that "[s]tate commissions may, where reasonable, require incumbent LECs to recover nonrecurring costs through recurring charges over a reasonable period of time. Nonrecurring charges shall be allocated efficiently among requesting telecommunications carriers, and *shall not permit an incumbent LEC to recover more than the total forward-looking economic cost of providing the applicable element*." (Emphasis added.)

To the best of my knowledge, the Commission has not issued any findings concerning the appropriate level, if any, of non-recurring "conditioning" charges based on forward-looking costs because the Commission has never before reviewed the recurring and non-recurring UNE cost studies for a specific incumbent local exchange carrier. This arbitration presents the Commission with an opportunity to determine the appropriate level of non-recurring "conditioning" charges in the context of actual forward-looking cost studies. For all of the reasons that I have explained above, approval of any non-recurring "conditioning" charges for Verizon Virginia would result in double-recovery of the forward-

looking costs for fully "conditioned" loops that Mr. Pitkin has calculated using the Synthesis Model, as modified for use in this arbitration. Thus, in my opinion, adoption of any positive non-recurring charge for "conditioning" would be inconsistent with this Commission's prior determinations concerning the application of forward-looking cost principles to both recurring and non-recurring costs,

Q. YOUR TESTIMONY DOES NOT ADDRESS PRICES FOR UNBUNDLED NETWORK ELEMENTS RELATED TO LINE-SHARING OR LINE-SPLITTING, OTHER THAN THE LOOP "CONDITIONING" AND ACCESS TO LOOP MAKEUP INFORMATION ISSUES THAT APPLY TO ALL DSL-CAPABLE LOOPS. HOW DO AT&T AND WORLDCOM PROPOSE TO ADDRESS LINE-SHARING AND LINE-SPLITTING PRICES?

A. I understand that the New York collaborative is addressing line-sharing and line-splitting configurations that would serve as a template for service offerings throughout the Verizon region. Therefore, AT&T and WorldCom propose to address other DSL-related pricing issues after the results of the New York collaborative become available and there is greater certainty concerning the options for which prices are required.

Q. DOES THAT CONCLUDE YOUR TESTIMONY AT THIS TIME?

A. Yes.

I, Terry L. Murray, hereby swear and affirm that the foregoing direct testimony was prepared by me or under my direct supervision or control and is true and accurate to the best of my knowledge and belief.

Signed:

Terry L. Murray
Witness

State of California :
County of Alameda :

I, Ann S. Kraynak do hereby swear and affirm that

Terry L. Murray appeared before me this 27 day of July, 2001.

ANN S. KRAYNAK
COMM #1251649
NOTARY PUBLIC-CALIFORNIA
COUNTY OF ALAMEDA
My Comm. Expires Feb 19, 2004

Signed:

Ann S Kraynak
Notary

Notary Qualification Expires: 2/19/04

[Stamp or Seal]

EXHIBIT (TLM-1)
CURRICULUM VITAE OF
TERRY L. MURRAY

Terry L. Murray

President, Murray & Cratty, LLC
January 1998 - present
Economic consulting and expert witness testimony specializing in regulatory and antitrust matters.

Principal, Murray and Associates
April 1992 - December 1997
Economic consulting and expert witness testimony, primarily in the fields of telecommunications, energy and insurance regulation and antitrust.

Director, Regulatory Economics, Morse, Richard, Weisenmiller & Associates, Inc.
April 1990 - April 1992
Economic consulting and expert witness testimony, primarily in the fields of telecommunications and energy regulation.

California Public Utilities Commission
June 1984 - March 1990

Director, Division of Ratepayer Advocates (DRA)
March 1989 - March 1990
Headed a staff of over 200 analysts who provided expert witness testimony on behalf of California ratepayers in contested proceedings involving telecommunications, electric, gas, water and transportation utilities. Major proceedings included evaluation of proposed merger between Southern California Edison and San Diego Gas and Electric Companies.

Program Manager, Energy Rate Design and Economics Branch, DRA
October 1987 - March 1989
Managed a staff of over 30 analysts who testified on electric and gas rate design and costing issues, sales forecasts and productivity analyses. Testified as lead policy witness in electric utility incentive ratemaking and transportation policy proceedings.

Senior Policy Analyst, Policy and Planning Division
March 1987 - October 1987
Organized *en banc* hearing and drafted notice of investigation for major telecommunications incentive regulation proceeding. Headed Commission task force on open network architecture.

Commissioner's Advisor
July 1985 - March 1987
Lead advisor on independent power industry and cost of capital issues. Analyzed proposed decisions on energy, telecommunications, water and transportation issues and made recommendations for Commission action. Co-authored Commission order establishing conditions for approval of San Diego Gas and Electric Company application to form a holding company.

Staff Economist, Public Staff Division
June 1984 - July 1985
Testified on cost of capital and telecommunications bypass issues. Served on telecommunications strategy task force charged with developing recommendations for post-divestiture regulatory policies.

Instructor, Golden Gate University
1986 - 1987
Taught courses on telecommunications regulation to students in the Masters in Telecommunications Management program and students in a special program for federal government telecommunications managers.

Acting Assistant Professor of Economics, Wesleyan University
July 1981 - June 1982
Taught undergraduate courses in microeconomics, macroeconomics, econometrics, and economics and policy of regulation.

TESTIMONY

California Department of Insurance

- File Nos. PA-94-0012-00 & PA-94-0012-0A, In re 20th Century Insurance Company and 21st Century Casualty Company.
- File Nos. PA-93-0014-00 *et al.*, In the Matter of the Rates and Rating Practices, and Rate Applications of: State Farm Mutual Automobile Insurance Company, State Farm Fire and Casualty Company, State Farm General Insurance Company, Applicants and Respondents, 3/1/94, 3/29/94.
- File Nos. PA-93-0009-00 *et al.*, In the Matter of the Rate Applications of Nationwide Mutual Insurance Company, Nationwide Mutual Fire Insurance Company, Nationwide Property and Casualty Insurance Company, Applicants, 9/11/93.

California Public Utilities Commission

- A.01-01-010, Application by Pacific Bell Telephone Company (U 1001 C) for Arbitration of an Interconnection Agreement with MCImetro Access Transmission Services, L.L.C. (U 5253 C) Pursuant to Section 252(b) of the Telecommunications Act of 1996,. 2/2/01.
- A.00-01-022, Application of AT&T Communications of California, Inc., *et al.*, for Arbitration of an Interconnection Agreement with Pacific Bell Pursuant to Section 252(b) of the Telecommunications Act of 1996, 1/24/00, 3/5/00.
- A.00-01-012, In the Matter of Covad Communications Company's (U 5752 C) Petition for Arbitration of Interconnection Agreement with Roseville Telephone Company (U 1015 C), 1/7/00.
- A.98-12-005, In the Matter of the Joint Application of GTE Corporation ("GTE") and Bell Atlantic Corporation ("Bell Atlantic") to Transfer Control of GTE's California Utility Subsidiaries to Bell Atlantic Which Will Occur Indirectly as a Result of GTE's Merger with Bell Atlantic, 6/7/99.
- A.99-03-047, In the Matter of the Petition by Pacific Bell (U 1001 C) for Arbitration of an Interconnection Agreement with Metropolitan Fiber Systems/ Worldcom Technologies, Inc. (MFS/Worldcom) Pursuant to Section 252(b) of the Telecommunications Act of 1996, 4/16/99, 5/24/99.
- A.98-05-038, In the Matter of the Application of Pacific Bell for Authority for Pricing Flexibility and to Increase Certain Operator Services, to Reduce the Number of Monthly

Directory Assistance Call Allowances, and Adjust Prices for Four Centrex Optional Features, 11/17/98.

- A.98-06-052, In the Matter of the Petition of PDO Communications, Inc. for Arbitration Pursuant to Section 252 of the Federal Telecommunications Act of 1996 to Establish an Interconnection Agreement with Pacific Bell, 8/14/98.
- In the Matter of the Petition of MCImetro Access Transmission Services, Inc. for Arbitration of Interconnection Rates, Terms, and Conditions Pursuant to 47 U.S.C. § 252(b) of the Telecommunications Act of 1996 (re: GTE California, Inc.), 9/96.
- A.96-04-038, In the Matter of the Joint Application of Pacific Telesis Group and SBC Communications, Inc. for SBC to Control Pacific Bell, 9/30/96.
- A.93-03-054, Application to Modify Diablo Canyon Pricing and Adopt a Customer Electric Rate Freeze in Compliance with Decision 95-12-063, 9/9/96.
- R.93-04-003/I.93-04-002, Rulemaking and Investigation on the Commission's Own Motion to Govern Open Access to Bottleneck Services and Establish and Framework for Network Architecture Development of Dominant Carrier Networks, 6/14/96, 7/10/96, 3/18/97, 12/19/97, 2/11/98, 4/8/98, 4/27/98, 5/1/98, 6/5/98, 12/18/98, 1/11/99, 2/8/99, 3/15/00, 3/27/00, 4/5/00, 5/2/00, 6/11/01, 6/25/01, 7/24/01.
- I.95-04-044, Order Instituting Investigation on the Commission's Own Motion into Competition for Local Exchange Service, 10/2/95, 10/9/95, 12/95.
- I.94-04-032, Order Instituting Investigation on the Commission's Proposed Policies Governing Restructuring California's Electric Services Industry and Reforming Regulation, 12/8/94.
- Application Nos. 93-05-008 *et al.*, In the Matter of the Application of Sierra Pacific Power Company to Authorize a Return on Equity for Calendar Year 1994 Pursuant to Attrition Rate Adjustment Mechanism, 8/93.
- Application Nos. 92-05-002 and 92-05-004, Application of GTE California Incorporated for Review of the Operations of the Incentive-Based Regulatory Framework Adopted in Decision 89-10-031, 5/93, 7/93.
- Case No. 91-12-028, The City of Long Beach, in its Proprietary Capacity and as Trustee for the State of California, Complainant, vs. Unocal California Pipeline Company, a Unocal Company, Defendant, 5/15/93.
- I.87-11-033 *et al.*, In the Matter of Alternative Regulatory Frameworks for Local Exchange Carriers (Phase III, Implementation and Rate Design), 9/23/91, 12/16/91, 1/17/92.
- General freight deregulation proceeding, 10/88.
- I.86-10-001, Risk, Return and Ratemaking, 3/88.
- Southwest Gas General Rate Case, 8/85.
- Application No. 85-01-034, Pacific Bell Test Year 1986 General Rate Case, 4/22/85.
- CP National South Lake Tahoe Gas General Rate Case, 12/84.

Colorado Public Service Commission

- Docket No. 91A-480EG, In the Matter of the Joint Application of the Parties to Revised Settlement Agreement II in Docket Nos. 91S-091EG and 90F-226E for Commission Consideration of Decoupling Revenues from Sales and Establishment of Regulatory Incentives to Encourage the Implementation of DSM Programs, 11/8/91, 4/30/92, 9/8/92, 9/14/92.

Connecticut Department of Public Utility Control

- In the Matter of the Petition of MCImetro Access Transmission Services, Inc. for Arbitration of Interconnection Rates, Terms, and Conditions Pursuant to 47 U.S.C. §

252(b) of the Telecommunications Act of 1996 (with The Southern New England Telephone Company), 12/96.

- Docket Nos. 95-06-17 *et al.*, Application of The Southern New England Telephone Company for Approval to Offer Unbundled Loops, Ports and Associated Interconnection Arrangements, 9/8/95.

Delaware Public Service Commission

- Docket No. 96-324, Bell Atlantic - Delaware Statement of Terms and Conditions Under Section 252(F) of the Telecommunications Act of 1996, 2/4/97.
- Docket No. 45, In the Matter of the Development of Regulations for the Facilitation of Competitive Entry into the Telecommunications Local Exchange Service Market, 7/3/96.

District of Columbia Public Service Commission

- Formal Case No. 962, In the Matter of the Implementation of the District of Columbia Telecommunications Act of 1996 and Implementation of the Telecommunications Act of 1996, 3/24/97, 5/2/97, 5/9/97.

Federal Communications Commission

- File No. E-98-12, MCI Telecommunications Corp. and MCImetro Access Transmission Services, Inc., Complainants, v. Bell Atlantic Corp., Defendant, 12/19/97, 3/25/98.
- CC Docket No. 94-1, In the Matter of Price Cap Performance Review for Local Exchange Carriers, 6/29/94.
- W-P-C 6913 *et al.*, In re the Matter of the Application of Pacific Bell for Authority Pursuant to Section 214 of the Communications Act of 1934, and Section 63.01 of the Commission's Rules and Regulations to Construct and Maintain Advanced Telecommunications Facilities to Provide Video Dialtone Services to Selected Communities.

Florida Public Service Commission

- Docket No. 990649-TP, In re: Investigation into the Pricing of Unbundled Network Elements, 8/11/99, 9/10/99, 10/15/99, 6/8/00, 7/31/00, 8/28/00.
- Docket No. 930424-EI, In re: Request for Approval of Proposal for Incentive Return on Demand-Side Management Investments by Florida Power Corporation, 11/22/93.
- Docket No. 93-444-EI, In re: Request for Approval of Proposal for Revenue Decoupling by Florida Power Corporation, 11/22/93.

Georgia Public Service Commission

- Docket No. 11900-U, In re: Investigation of BellSouth Telecommunications, Inc.'s Provision of Unbundled Network Elements for xDSL Service Providers, 11/13/00, 12/20/00.

Hawaii Public Service Commission

- Docket No. 7702, In the Matter of Public Utilities Commission Instituting a Proceeding on Communications, Including an Investigation of the Communications Infrastructure of the State of Hawaii, 7/3/97, 8/29/97, 6/2/00.

Illinois Commerce Commission

- Docket No. 00-0393, Illinois Bell Telephone Company Proposed Implementation of High Frequency Portion of Loop (HFPL) / Line Sharing Service, 9/1/00, 9/20/00, 10/4/00.

- Docket Nos. 00-0312 and 00-0313, Petitions of Covad Communications Company and Rhythms Links Inc. for Arbitration Pursuant to Section 252(b) of the Telecommunications Act of 1996 to Establish an Amendment for Line Sharing to the Interconnection Agreement with Illinois Bell Telephone Company d/b/a Ameritech Illinois, and for an Expedited Arbitration Award on Certain Core Issues, 5/15/00, 6/22/00, 11/21/00, 12/12/00, 12/21/00, 7/13/00.
- Docket No. 98-0396, Investigation into the Compliance of Illinois Bell Telephone Company with the Order in Docket 96-0486/0569 Consolidated Regarding the Filing of Tariffs and the Accompanying Cost Studies for Interconnection, Unbundled Network Elements and Local Transport and Termination and Regarding End to End Bundling Issues, 3/29/00, 5/5/00, 7/12/00.
- Docket No. 99-0593. Investigation of Construction Charges, 2/17/00, 3/8/00, 3/22/00.
- In the Matter of the Petition of MCImetro Access Transmission Services, Inc. for Arbitration of Interconnection Rates, Terms, and Conditions Pursuant to 47 U.S.C. § 252(b) of the Telecommunications Act of 1996 (Ameritech – Illinois), 12/96.

Kansas Corporation Commission

- Docket No. 00-DCIT-997-ARB, In the Matter of the Petition of Covad Communications Company for Arbitration of Interconnection Rates, Terms, Conditions and Related Arrangements for Line Sharing with Southwestern Bell Telephone Company, 6/12/00.
- Docket No. 00-DCIT-389-ARB, In the Matter of the Petition of DIECA Communications, Inc. d/b/a Covad Communications Company for Arbitration of Interconnection Rates, Terms, Conditions and Related Arrangements with Southwestern Bell Telephone Company, 1/7/00, 1/25/00, 2/21/00.
- Docket Nos. 190, 192-U, In the Matter of a General Investigation into Competition within the Telecommunications Industry in the State of Kansas, 11/14/94.

Maryland Public Service Commission

- Case No. 8879 – In the Matter of the Investigation into Rates for Unbundled Network Elements Pursuant to the Telecommunications Act of 1996, 5/25/01.
- Case No. 8745 – In the Matter of the Provision of Universal Service to Telecommunications Consumers, 5/21/01, 6/11/01.
- Case No. 8842 – In the Matter of Rhythms Links Inc. and Covad Communications Company vs. Bell Atlantic-Maryland, Inc., pursuant to Section 252(B) of the Telecommunications Act of 1996, 5/5/00, 7/14/00, 10/27/00.
- Case No. 8820, In the Matter of the Investigation into Affiliated Activities, Promotional Practices and Codes of Conduct of Regulated Gas and Electric Companies, 10/1/99, 10/26/99, 12/10/99.
- Docket No. 8797, In the Matter of The Potomac Edison Company's Proposed: (a) Stranded Cost Quantification Mechanism; (b) Price Protection Mechanism; (c) and Unbundled Rates, 1/26/99.
- Docket No. 8795, In the Matter of Delmarva Power and Light Company's Proposed Stranded Cost Quantification Mechanism, Price Protection Mechanism, and Unbundled Rates, 12/28/98.
- Docket No. 8794, In the Matter of Baltimore Gas and Electric (BGE)'s Proposed Stranded Cost Quantification Mechanism, Price Protection Mechanism, and Unbundled Rates, 12/22/98, 7/23/99, 8/3/99.
- Docket No. 8786, In the Matter of the Investigation of Non-Recurring Charges for Telecommunications Interconnection Service, 5/27/98, 11/16/98, 12/18/98.

- Docket No. 8731, Phase II, In the Matter of the Petitions for Approval of Agreements and Arbitration of Unresolved Issues Arising Under §252 of the Telecommunications Act of 1996, 3/7/97.
- Case No. 8731, In the Matter of the Petitions for Approval of Agreements and Arbitration of Unresolved Issues Arising under Section 252 of the Telecommunications Act of 1996, 10/96.
- Case No. 8715, In the Matter of the Inquiry into Alternative Forms of Regulating Telephone Companies, 11/95, 4/1/96.

Massachusetts Department of Telecommunications and Energy

- Docket No. DTE 98-57, Investigation by the Department on its own motion as to the propriety of the rates and charges set forth in the following tariffs: M.D.T.E. Nos. 14 and 17, filed with the Department on April 2, 1999, to become effective May 2, 1999, by New England Telephone and Telegraph Company d/b/a Bell Atlantic – Massachusetts, 7/26/99, 11/9/99.

Michigan Public Service Commission

- Case No. U-12540, In the Matter of the Application of Ameritech Michigan for Approval of Cost Studies and Resolution of Disputed Issues Related to Certain New UNE Offerings, 9/15/00, 10/13/00.
- Case No. U-10755, In the Matter of the Application of Consumers Power Company for Authority to Increase Its Rates for the Sale of Natural Gas and for Other Relief, 6/9/95.
- Case No. U-10685, In the Matter of the Application of Consumers Power Company for Authority to Increase Its Rates for the Sale of Electricity, 3/29/95, 5/5/95.
- Case No. U-10647, In the Matter of the Application of City Signal, Inc., for an Order Establishing and Approving Interconnection Arrangements with Michigan Bell Telephone Company, 8/5/94, 11/7/94, 11/30/94.

Missouri Public Service Commission

- Case No. TO-2001-439, In the Matter of the Determination of Prices, Terms, and Conditions of Conditioning for xDSL-Capable Loops, 6/22/01, 7/13/01.
- Case No. TO-2000-322, In the Matter of the Petition of DIECA Communications, Inc. d/b/a Covad Communications Company for Arbitration of Interconnection Rates, Terms, Conditions and Related Arrangements with Southwestern Bell Telephone Company, 1/7/00, 1/27/00, 2/10/00.

Nevada Public Service Commission

- In re a Petition of the Staff of the Public Utilities Commission to Open a Docket to Investigate Costing and Pricing Issues Related to Industry-Wide Collocation Costs Pursuant to the Telecommunications Act of 1996 and the Commission's Regulations, 11/3/00.
- Docket No. 96-9035, In re a Petition by the Regulatory Operations Staff to Open an Investigation into the Procedures and Methodologies that Should Be Used to Develop Costs for Bundled or Unbundled Telephone Services or Service Elements in the State of Nevada, 5/8/97, 5/23/97.

New Jersey Board of Public Utilities

- Docket No. TO00060356, In the Matter of the Board's Review of Unbundled Network Elements Rates, Terms and Conditions of Bell Atlantic – New Jersey, 10/12/00.

- Docket No. TX95120631, Notice of Investigation into Local Exchange Competition for Telecommunications Services, 8/30/96, 12/20/96.

New York Public Service Commission

- Case No. 98-C-1357, Proceeding on Motion of the Commission to Examine New York Telephone Company's Rates for Unbundled Network Elements, 9/23/99, 10/18/99, 10/22/99, 2/7/00, 2/22/00, 3/31/00, 4/17/00, 6/26/00, 10/19/00, 11/13/00.
- Case Nos. 94-E-0098 and 94-E-0099, Niagara Mohawk Fuel Adjustment Clause Target and S.C. 6 Update Filing, 11/17/95.
- Case Nos. 93-E-0912 and 93-E-1075, Proceeding on Motion of the Commission to Review Long-Run Avoided Cost Estimation Policies and Methods, 5/10/95, 5/31/95.
- Case Nos. 92-E-1055 and 92-G-1056, Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations for Central Hudson Gas & Electric Company for Electric Service and Gas Service, respectively, 3/93.
- Case Nos. 92-E-0108 *et al.*, Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Niagara Mohawk Power Corporation for Electric Service, 1992.
- Case Nos. 91-E-0863 *et al.*, Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of New York State Electric & Gas Corporation for Electric Service, 1/92.
- Case Nos. 91-E-0765 *et al.*, Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Rochester Gas & Electric Corporation for Electric Service, 11/91.
- Case No. 91-E-0506, Proceeding on Motion of the Commission as to the Rates, Charges, Rules, and Regulations for Central Hudson Gas & Electric Company for Electric Service, 9/91, 10/91.
- Case Nos. 29327 *et al.*, Niagara Mohawk Power Corporation Financial Recovery Agreement proceeding, 3/91.
- Docket No. 89-E-176, In the Matter of the Proceeding on Motion of the Commission to Examine Ratemaking Practices and Incentive Mechanisms Promoting Least-Cost Planning and Demand-Side Management by Electric Utilities, 4/19/90, 5/4/90, 4/18/91, 6/20/91.

North Carolina Utilities Commission

- Docket Nos. P-7, Sub 825, and P-10, Sub 479, In the Matter of Petition of Carolina Telephone and Telegraph and Central Telephone Company for Approval of a Price Regulation Plan Pursuant to G. S. 62-133.5, 1/31/96.
- Docket No. P-55, Sub 1013, In the Matter of Application of BellSouth Telecommunications, Inc., for, and Election of, Price Regulation and Motion for a Hearing, 1/28/96, 2/1/96.

Ohio Public Utilities Commission

- Case No. 96-922-TP-UNC, In the Matter of the Review of Ameritech Ohio's Economic Costs for Interconnection, Unbundled Network Elements, and Reciprocal Compensation for Transport and Termination of Local Telecommunications Traffic, 10/6/00.

Oklahoma Corporation Commission

- Cause No. PUD 200000192, Applicant: Southwestern Bell Telephone Company; Relief Sought: Approval of Nonrecurring Rates for Conditioning Unbundled Digital Subscriber Line ("DSL") Capable Loops, 7/12/00, 8/1/00.

Oregon Public Utility Commission

- Case No. UM-731, Phase IV, In the Matter of the Investigation of Universal Service in the State of Oregon, 1/17/00.

Pennsylvania Public Utility Commission

- Docket No. M-00001353, Re Structural Separation of Verizon-Pennsylvania Inc. Wholesale and Retail Operations, 10/10/00.
- Docket No. R-00005261, In re: Further Pricing of Bell Atlantic Pennsylvania, Inc.'s Unbundled Network Elements, 10/4/00.
- Docket Nos. R-00994697 and R-994697C0001, Pennsylvania Public Utility Commission v. Bell Atlantic – Pennsylvania, Inc./ Rhythms Links Inc., Complainant v. Bell Atlantic–Pennsylvania, Inc., Respondent, 12/21/99, 1/14/00.
- Docket Nos. P-00991648, Joint Application of NEXTLINK Pennsylvania, Inc., *et al.* and P-00991649, Joint Application of Bell Atlantic – Pennsylvania, Inc., *et al.*, 4/22/99, 6/11/99.
- Docket Nos. A-310200F0002 *et al.*, In re the Joint Application of Bell Atlantic Corporation and GTE Corporation for Approval of Agreement and Plan of Merger, 3/23/99, 5/19/99.
- Docket No. I-00960066, Generic Investigation of Intrastate Access Charge Reform, 6/30/97, 7/29/97, 8/27/97.
- Docket No. A-31023670002, In the Matter of the Application of MCI Metro Access Transmission Services, Inc. for a Certificate of Public Convenience and Necessity to Provide and Resell Local Exchange Telecommunications Services in Pennsylvania, 9//96.
- Petition for Arbitration by AT&T-PA for an Interconnection Agreement with GTE-PA, 9/96.
- Petition for Arbitration by Eastern TeleLogic for an Interconnection Agreement with Bell Atlantic - Pennsylvania, 9/96.
- Petition for Arbitration by AT&T-PA for an Interconnection Agreement with Bell Atlantic - Pennsylvania, 9/96.
- Docket No. I-940035, Formal Investigation to Examine and Establish Updated Universal Service Principles and Policies for Telecommunications Services, 1/11/96, 2/14/96, 2/27/96.
- Docket No. A-310203F002, Application of MFS Intelenet of Pennsylvania, Inc., for Approval to Operate as a Local Exchange Telecommunications Company, 1/30/95, 2/22/96, 3/22/96, 1/13/97, 2/97.

South Carolina Public Service Commission

- Docket No. 95-720-C, Application of BellSouth Telecommunications, Inc. d/b/a Southern Bell Telephone and Telegraph Company for Alternative Regulation, 8/21/95, 9/11/95.
- Docket No. 95-862-C, Re: BellSouth Telecommunications, Inc. d/b/a Southern Bell Telephone and Telegraph Company Investigation of Level of Earnings, 8/21/95, 9/11/95.

Texas Public Utility Commission

- Docket Nos. 22168, Petition of IP Communications Corporation to Establish Public Utility Commission of Texas Oversight Concerning Line Sharing Issues and 22469, Complaint of Covad Communications Company and Rhythms Links, Inc. against Southwestern Bell Telephone Company and GTE Southwest Inc. for Post-Interconnection and Arbitration under the Telecommunications Act of 1996 Regarding Rates, Terms, Conditions and Related Arrangements for Line-Sharing, 5/17/00, 9/5/00 (rev. 10/6/00), 10/20/00.

- Docket Nos. 20226, Petition of Accelerated Connections, Inc. d/b/a ACI Corp. for Arbitration to Establish an Interconnection Agreement with Southwestern Bell Telephone Company, and 20272, Petition of DIECA Communications, Inc., d/b/a Covad Communications Company for Arbitration of Interconnection Rates, Terms and Conditions and Related Arrangements with Southwestern Bell Telephone Company, 2/19/99, 4/8/99.

Vermont Public Service Board

- Docket No. 5780, Green Mountain Power Company General Rate Case, 1/13/95.
- Docket No. 5695, Tariff Filing of Green Mountain Power Company Requesting an 8.60% Rate Increase to Take Effect 11/15/93, 1/94.

Virginia State Corporation Commission

- Petitions for Arbitration of AT&T-VA and MCI Communications Corporation for an Interconnection Agreement with Bell Atlantic - Virginia, 9/20/96.
- Petition for Arbitration of AT&T-VA for an Interconnection Agreement with GTE-VA, 8/96, 10/29/96.

Washington Utilities and Transportation Commission

- Docket No. UT-960639 *et al.*, Phase II, In the Matter of the Pricing Proceeding for Interconnection, Unbundled Elements, Transport and Termination, and Resale, 8/20/98, 9/11/98.
- Docket No. UT-950200, Washington Utilities and Transportation Commission vs. U S WEST Communications, Inc., 8/28/95, 12/15/95.
- Docket No. UT-941464 *et al.*, Washington Utilities and Transportation Commission vs. U S WEST Communications, Inc., 4/17/95, 5/31/95.
- Docket No. UT-911488 *et al.*, Washington Utilities and Transportation Commission vs. U S WEST Communications, Inc.

Wisconsin Public Service Commission

- In the Matter of the Petition of MCImetro Access Transmission Services, Inc. for Arbitration of Interconnection Rates, Terms, and Conditions Pursuant to 47 U.S.C. § 252(b) of the Telecommunications Act of 1996 (Ameritech – Wisconsin), 12/96.

EDUCATION

A.B., Oberlin College, Oberlin, Ohio. Major: Economics. National Merit Scholar, recipient of Hanson Prize in Economics, elected to Phi Beta Kappa.

M.A., M.Phil., Yale University, New Haven, Connecticut. Economics. Admitted to Ph.D. candidacy and completed all Ph.D. requirements except dissertation. Fields of specialization included industrial organization and energy and environmental economics. Honorable mention, National Science Foundation Fellowship; recipient of University Fellowship and Sloan Foundation dissertation research fellowship.

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of Petition of AT&T Communications of Virginia, Inc., Pursuant to Section 252(e)(5) of the Communications Act, for Preemption of the Jurisdiction of the Virginia State Corporation Commission Regarding Interconnection Disputes with Verizon-Virginia, Inc.	)	CC Docket No. 00-251
In the Matter of Petition of WorldCom, Inc. Pursuant To Section 252 (e)(5) of the Communications Act for Expedited Preemption of the Jurisdiction of the Virginia State Corporation Commission Regarding Interconnection Disputes With Verizon Virginia, Inc., and for Expedited Arbitration	)	CC Docket No. 00-218
In the Matter of) Petition of Cox Virginia Telecom, Inc. Pursuant to Section 252 (e)(5) of the Communications Act for PreemptionCC Docket No. 00-249 Of the Jurisdiction of the Virginia State Corporation Commission Regarding Interconnection Disputes with Verizon Virginia, Inc. and for Arbitration	)	CC Docket No. 00-249

DIRECT TESTIMONY OF
RICHARD J. WALSH
ON BEHALF OF AT&T[1] AND WORLDCOM, INC.

JULY 31, 2001

[1] This Affidavit is presented on behalf of WorldCom, Inc. and AT&T Communications of Virginia, Inc., TCG Virginia, Inc., ACC National Telecom Corp., MediaOne of Virginia and MediaOne Telecommunications of Virginia, Inc. (together, "AT&T").